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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/691,812	10/19/2000	Jefferson L. Wagener	2060/1 C1	5392

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EXAMINER

PAK, SUNG H

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 04/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/691,812

Applicant(s)

WAGENER ET AL.

Examiner

Sung H. Pak

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-87 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17, 21-23, 25-55, 57-74, 76, 77 and 80-87 is/are rejected.
- 7) ☒ Claim(s) 16, 18-20, 24, 56, 75, 78 and 79 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

All references submitted in the information disclosure statement have been considered by the examiner. Please refer to PTO-1449 enclosed herewith.

### ***Drawings***

The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15, 17, 21-23, 25-35, 36-43, 44-54, 55, 57-63, 66-72, 74, 76-77, 80-81 are rejected under 35 U.S.C. 102(e) as being anticipated by Weverka et al (US 6,501,877 B1).

Regarding claims 1, 36, 44, 55, 66, Weverka et al discloses an optical device with all the limitations set forth in the claims, including: an optical switch comprising a

plurality of input/output ports for receiving one or more wavelength components for an optical signal (column 4 lines 47-52); an optical arrangement directing the wavelength component to any given one of the plurality of input/output ports, the input/output port being variably selectable from among any of the plurality of input/output ports (column 2 lines 25-29).

Regarding claims 2-4, 36, Weverka et al discloses input of broadband signal (column 5 line 24) and the use of retroreflector that reflects regardless of the wavelength of the incident light (column 5 lines 47-48).

Regarding claims 5, 31, 68, Weverka et al discloses at least one wavelength selective element, a grating, and a plurality of optical elements, movable retroreflectors, each associated with one of the wavelength selective elements, each optical elements directing the selected wavelength component selected to a given one of the plurality of input/output ports independently of other wavelength component (Fig. 1a, 1b, 1c).

Regarding claims 6-7, 17, 38, 46, 57, 74, Weverka et al discloses a free space region disposed between input/output ports and optical arrangement/ wavelength selective elements (abstract).

Regarding claims 8-9, 39, 47, 58, 69, Weverka et al discloses transmissive diffraction grating (column 6 line 36).

Regarding claims 10-11, 40-42, 48-50, 59-60, 70-71, 80, Weverka et al discloses a selectively tiltable MEMs retroreflective mirror assembly (Fig. 5d).

Regarding claim 13, Weverka et al discloses a curved reflective element (Fig. 3).

Regarding claim 15, 51, 61, Weverka et al inherently discloses piezoelectric actuator (column 9 lines 5-7).

Regarding claim 18, Weverka et al discloses optically transparent substrate being silica glass (abstract).

Regarding claim 23, Weverka et al discloses free space region defined generally by rectangle (Fig. 3).

Regarding claims 25-26, Weverka et al discloses free space region being air or monolithic body (abstract).

Regarding claim 27-30, 52, 62, Weverka et al discloses collimating lens disposed between wavelength selective elements and optical element (Fig. 1a).

Regarding claim 32-34, Weverka et al discloses optical coupling arrangement directing first plurality of wavelength components to first optical arrangement subassembly and directing second plurality of wavelength components to second optical arrangement subassembly (Figs. 12-14).

Regarding claim 35, Weverka et al discloses the use of focusing mirror (Fig. 3).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 64-65, 73, 82-87 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weverka et al (US 6,501,877 B1).

Regarding claims 64-65, 73, Weverka et al discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not teach the use of monitoring element. However, such element is well known and commonly used in the WDM art. Monitoring elements provide a well known advantage of allowing for feedback compensation that minimizes noise and error in signal transmission. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Weverka et al device to have monitoring element.

Regarding claims 82-87, Weverka et al discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not teach the use of convex lens with titable mirror. However, the use convex lens with reflectors is well known in the optical switching/ routing art. Convex lens provide a well known

advantage of allowing the beam to focus on the reflective surface, minimizing insertion loss. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Weverka et al device to have convex lens used with the mirrors.

***Allowable Subject Matter***

Claims 16, 18-20, 24, 56, 75, 78-79 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: An optical multiplexing/ demultiplexing switch has been known in the prior art. However, none of the prior art fairly disclose or suggest an optical switch comprising, inter alia, plurality of wavelength selective elements and plurality of routing optical elements each associated with plurality of wavelength selective elements for variably directing wavelength components to and from input/output ports, wherein the wavelength selective elements are arranged as arrays in first and second parallel surfaces of optically transparent substrate, as claimed.

Regarding claim 56, the method steps recited in the claim would require, among other things, that the optical switch comprise wavelength selective elements arranged as arrays in parallel surfaces of optically transparent substrate, so that the light first encounters the wavelength selective element on one parallel side before it encounters wavelength selective element on the other parallel side of the substrate, as discussed

Art Unit: 2874

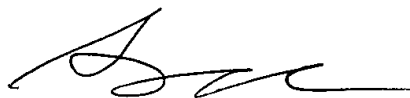
above. None of the prior art fairly teaches such structure, and the claim is deemed allowable.

**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (703) 308-4880. The examiner can normally be reached on Monday - Thursday : 6:30am-5:00pm.

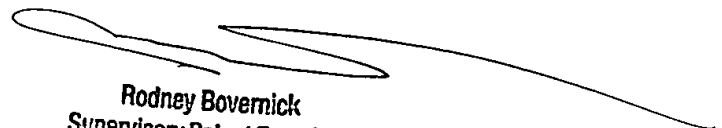
The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Sung H. Pak  
Examiner  
Art Unit 2874

sp  
March 26, 2003



Rodney Bovernick  
Supervisory Patent Examiner  
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